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CANADIAN
Stroke
BEST PRACTICE
RECOMMENDATIONS

CANADIAN STROKE BEST PRACTICE RECOMMENDATIONS

Mood, Cognition and Fatigue Following Stroke Evidence Tables

Post-Stroke Depression: Screening and Assessment

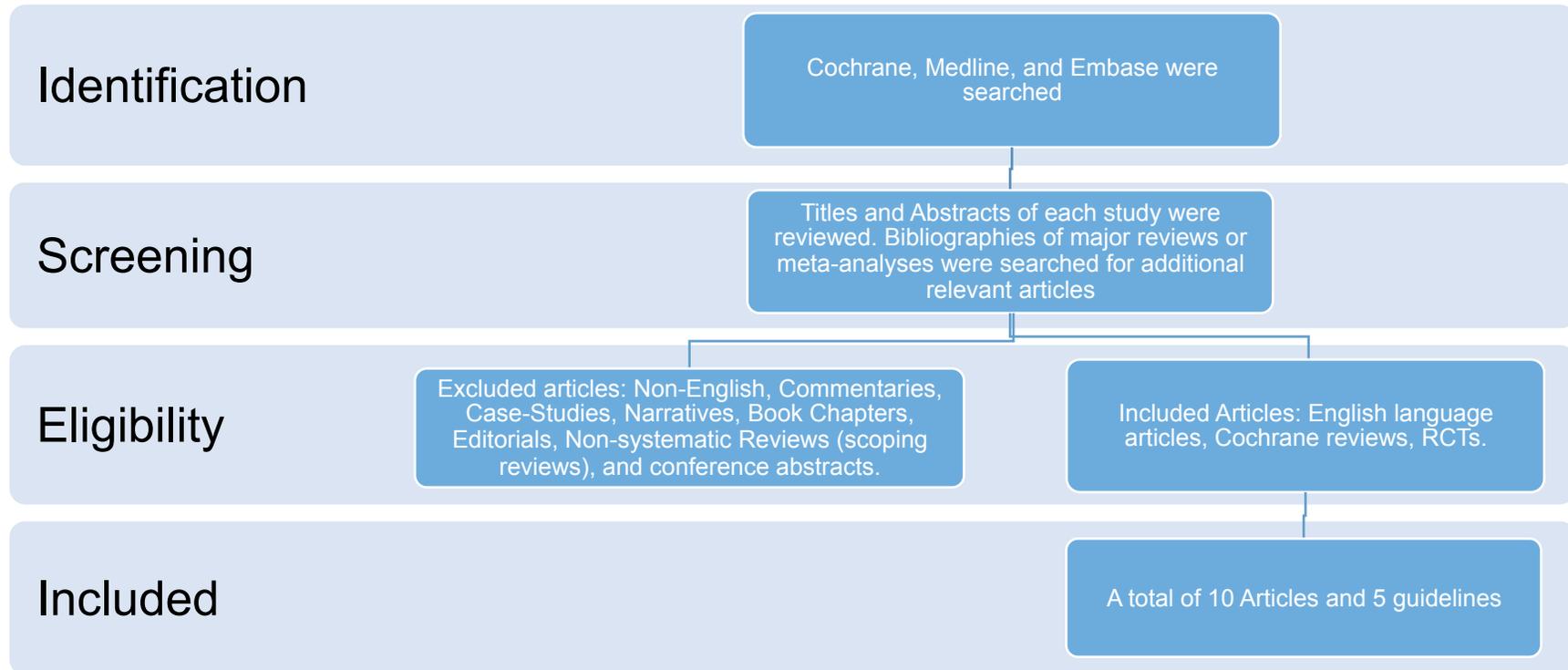
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Mood, Cognition and Fatigue Writing Group*

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Search Strategy



The Medline, Embase, PsycInfo, and Cochrane databases were searched using the terms [stroke OR cerebrovascular disorders] and [depression OR depressive disorders OR anxiety OR anxiety disorders OR emotional incontinence]. The title and abstract of each article was reviewed for relevance. Bibliographies were reviewed to find additional relevant articles. Articles were excluded if they were: non-English, commentaries, case-studies, narrative, book chapters, editorials, non-systematic review, or conference abstracts. Additional searches for relevant best practice guidelines were completed and included in a separate section of the review. A total of 10 articles and 5 guidelines were included and were separated into categories designed to answer specific questions.

Published Guidelines

Guideline	Recommendations
<p>National Stroke Foundation. Clinical Guidelines for Stroke Management 2010 Recommendations. Melbourne Australia.</p>	<p>Mood disturbance</p> <ol style="list-style-type: none"> 1. All patients should be screened for depression using a validated tool (GPP) 2. Patients with suspected altered mood (e.g., depression, anxiety, emotional lability) should be assessed by trained personnel using a standardized and validated scale (B) 3. Diagnosis should only be made following clinical interview (GPP) 4. Psychological strategies (e.g., problem solving, motivational interviewing), can be used to prevent depression after stroke (B). 5. Routine use of antidepressants to prevent post-stroke depression is NOT recommended (B). 6. Antidepressants can be used for stroke patients who are depressed (following due consideration of the benefit and risk profile for the individual) and for those with emotional lability (B). 7. Psychological (cognitive-behavioural) intervention can be used for stroke patients who are depressed (B). <p>Behavioural change</p> <ol style="list-style-type: none"> 1. The impact of chronic behavioural changes (irritability, aggression, perseveration, adynamia/apathy, emotional lability, disinhibition, and impulsivity) on functional activities, participation and quality of life, including the impact on relationships, employment and leisure, should be assessed and addressed as appropriate over time (GPP). 2. Stroke survivors and their families/cares should be given access to individually tailored interventions for personality and behavioural changes e.g. participation in anger-management therapy and rehabilitation training and support in management of complex and challenging behaviour (GPP). <p>Care after hospital discharge</p> <p>Stroke survivors can be managed using a care management model after discharge. If used, care managers should be able to recognize and manage depression and help to coordinate appropriate interventions via a medical practitioner (C).</p>
<p>Intercollegiate Stroke Working Party. National clinical guideline for stroke, 4th edition. London: Royal College of Physicians, 2012.</p>	<p>Depression and anxiety</p> <ol style="list-style-type: none"> 1. Any patient considered to have depression or anxiety should be assessed for other mood disorders. 2. Patients with mild or moderate symptoms of depression should be given information, support and advice (see recommendation 6.34.1G) and considered for one or more of the following interventions: <ul style="list-style-type: none"> • increased social interaction • increased exercise • goal setting • other psychosocial interventions. 3. Patients prescribed antidepressant drug treatment for depression or anxiety should be monitored for known adverse effects, and treatment continued for at least 4 months beyond initial recovery. If the patient's mood has not improved 2–4 weeks after initiating treatment, check that the patient is taking the medicine as prescribed. If they are, then consider increasing the dose or changing to another antidepressant. 4. Patients receiving drug treatment for depression or anxiety should have it reviewed regularly to assess continued need. 5. Brief, structured psychological therapy should be considered for patients with depression. Therapy will need to be adapted for use in those with neurological conditions.

Guideline	Recommendations
	<p>6. Antidepressant treatment should not be used routinely to prevent the onset of depression.</p> <p>Emotionalism</p> <ol style="list-style-type: none"> 1. Any patient who persistently cries or laughs in unexpected situations or who is upset by their fluctuating emotional state should be assessed by a specialist or member of the stroke team trained in the assessment of emotionalism. 2. Any patient diagnosed with emotionalism should, when they show increased emotional behaviour, be appropriately distracted from the provoking stimuli. 3. Patients with severe, persistent or troublesome emotionalism should be given antidepressant drug treatment, monitoring the frequency of crying to check effectiveness. Patients should be monitored for known adverse effects. If the emotionalism has not improved 2–4 weeks after initiating treatment, check that the patient is taking the medicine as prescribed. If they are, then consider increasing the dose or changing to another antidepressant. <p>Psychological Care</p> <ol style="list-style-type: none"> 1. Services should adopt a comprehensive approach to the delivery of psychological care after stroke, which should be delivered by using a ‘stepped care’ model from the acute stage to long-term management (see chapter 7). 2. Interventions for individual disorders of mood or cognition should be applied within the framework of a stepped care and comprehensive model. 3. Patients with continuing disorders should be considered for comprehensive interventions tailored towards developing compensatory behaviours and the learning of adaptive skills. 4. Within Step 1 care all patients after stroke should be screened within 6 weeks of diagnosis, using a validated tool, to identify mood disturbance and cognitive impairment. 5. Assessment measures should be adapted for use with patients with expressive or minor receptive aphasia. In patients with more severe aphasia, an assessment tool designed specifically for this purpose, such as the SAD-Q or DISCS, should be used. In patients with aphasia or other impairments that complicate assessment, careful observations over time (including response to a trial of antidepressant medication if considered necessary) should be used. 6. Within Step 2 care, patients identified as having symptoms of mood disorder should be offered a more detailed assessment, seeking information on past history, potential causes and impact, and treatment preferences. 7. In patients with mild or moderate symptoms of mood disorder, patients and carers should be provided with information, support and advice about the mood disorder as the first line of intervention. This may be from within the MDT by nominated staff who are suitably trained and supervised, and may also involve the voluntary sector. 8. Within Step 3 care, patients with severe or persistent symptoms of mood disorder should be considered for referral to a specialist in the management of mood disorder in stroke. 9. Psychological or pharmaceutical treatment (or a combination) for mood disorder should be provided if: recommended by a clinician with expertise in managing mood disorder after stroke; or, as the second line of intervention, if the patient has not responded to information, support and advice. Any treatment should be monitored for effectiveness and kept under review. 10. Any patient assessed as having a cognitive impairment should be considered for referral to a specialist in cognitive aspects of stroke. Patients identified as having cognitive impairment or mood disorder should be reassessed before discharge decisions are taken.
<p>Scottish Intercollegiate Guidelines Network (SIGN). Management of patients</p>	<p>Preventing post-stroke depression</p> <ol style="list-style-type: none"> 1. Routine prescription of antidepressants is not recommended to prevent post-stroke depression (B).

Guideline	Recommendations
<p>with stroke: Rehabilitation, prevention and management of complications, and discharge planning: A national clinical guideline, 2010. Edinburgh, Scotland.</p>	<ol style="list-style-type: none"> 2. Offering routine psychological therapies in one-to-one format following a stroke is not recommended to prevent post-stroke depression (B). 3. Psychological principles from motivational interviewing and problem solving should be incorporated into education programmes for people who have had a stroke (B). 4. Stroke rehabilitation services should consider structured, psychologically-based programmes (incorporating education and advice) to target individuals' emotional adjustment to the impact of stroke, and to increase their sense of control over their recovery. Such programmes require staff training and ongoing evaluation to ensure clinical benefit (GPP). <p>Treating post-stroke depression</p> <ol style="list-style-type: none"> 1. Patients with post-stroke depression should be considered for antidepressant treatment, with decisions made on an individual basis. Clinicians should monitor response to treatment, plan regular reviews and should be vigilant to the possible occurrence of unwanted side effects, issues of adherence to medication and the possibility of symptom relapse (A). 2. Clinicians need to make decisions on the choice of antidepressant on a case-by-case basis, taking into account factors such as risk of seizures, falls and delirium (GPP). 3. Patients who fail to respond to antidepressant therapy, or who do not wish to take medication, should be considered for a trial of talking-based therapy, with clinicians carefully monitoring response to treatment (GPP). 4. Clinicians should be aware that environmental factors (eg opportunities for social interaction, noise levels) often have an impact on mood, and should consider whether it is possible to alter these factors when individuals experience post-stroke depression (GPP). <p>Emotional lability</p> <ol style="list-style-type: none"> 1. Patients with post-stroke emotionalism may be considered for a course of antidepressant medication (B). 2. Possible side effects of antidepressant treatment should be explained to patients prior to commencing treatment (GPP). 3. Patients and carers should be offered a clear explanation and advice about emotionalism, and considered for psychological (talking-based) support if they have a poor response to antidepressant medication and show evidence of distress about their condition. Local psychological support, education and advice should be considered on an individual basis as available. Such advice should be embedded in general education programmes. <p>Post-stroke emotional adjustment</p> <ol style="list-style-type: none"> 1. People who have had a stroke should be considered for workbook approaches that aim to address their beliefs and attitudes about their recovery (GPP). <p>Summary of Recommendations</p> <ol style="list-style-type: none"> 1. Appropriate referral to health and clinical psychology services should be considered for patients and carers to promote good recovery/adaptation and prevent and treat abnormal adaptation to the consequences of stroke (GPP). 2. All stroke patients (including those cared for in primary care) should be screened for mood disturbance (GPP). 3. Some form of screening should occur, eg using the Stroke Aphasic Depression Questionnaire (SAD-Q) or General Health Questionnaire of 12 items (GHQ-12): <ul style="list-style-type: none"> • as early as appropriate and definitely before discharge, and • at regular intervals thereafter

Guideline	Recommendations
	<p>4. Clinical judgement should be used to determine how regularly mood should be re-assessed (GPP). If an individual is suspected of having a mood disorder they should be referred to an appropriately trained professional for a full assessment, or to a rehabilitation team member who has received training in the identification of psychological distress (GPP).</p>
<p>VA/DoD clinical practice guideline for the management of stroke rehabilitation 2010.</p>	<p>Post stroke depression</p> <ol style="list-style-type: none"> 1. There are several treatment options for the patient with stroke and mild depression that can be used alone or in combination based on the patient's individual need and preference for services. Refer to VA/DoD guidelines for the management of Major Depression Disorder (MDD). 2. Patients diagnosed with moderate to severe depression after stroke should be referred to Mental Health specialty for evaluation and treatment. 3. There is conflicting evidence regarding the use of routine pharmacotherapy or psychotherapy to prevent depression or other mood disorders following stroke. 4. Patients with stroke who are suspected of wishing to harm themselves or others (suicidal or homicidal ideation) should be referred immediately to Mental Health for evaluation. 5. Recommend that patients with stroke should be given information, advice, and the opportunity to talk about the impact of the illness upon their lives. <p>Other Mood Disorders</p> <ol style="list-style-type: none"> 6. Patients following stroke exhibiting extreme emotional lability (i.e. pathological crying/tearfulness) should be given a trial of antidepressant medication, if no contraindication exists. SSRIs are recommended in this patient population. [A] 7. Patients with stroke who are diagnosed with anxiety related disorders should be evaluated for pharmacotherapy options. Consider psychotherapy intervention for anxiety and panic. Cognitive Behavioral Therapy has been found to be a more efficacious treatment for anxiety and panic disorder than other therapeutic interventions. 8. Recommend skills training regarding Activities of Daily Living (ADL's), and psychoeducation regarding stroke recovery with the family. 9. Encourage the patient with stroke to become involved in physical and/or other leisure activities. <p>Assessment of emotional and behavioral state</p> <ol style="list-style-type: none"> 1. Initial evaluation of the patient should include a psychosocial history that covers pre-morbid personality characteristics, psychological disorders, pre-morbid social roles, and level of available social support. 2. Brief, continual assessments of psychological adjustment should be conducted to quickly identify when new problems occur. These assessments should also include ongoing monitoring of suicidal ideation and substance abuse. Other psychological factors deserving attention include: level of insight, level of self-efficacy/locus of control, loss of identity concerns, social support, sexuality, and sleep. 3. Review all medications and supplements including over the counter (OTC) medications that may affect behavior and function. 4. Inclusion of collateral information (e.g., spouse, children) is recommended to obtain a comprehensive picture of the patient's pre-morbid functioning and psychological changes since the stroke. 5. There is insufficient evidence to recommend the use of any specific tools to assess psychological adjustment. Several screening and assessment tools exist. (See Appendix B for standard instruments for psychological assessment.) 6. Post-stroke patients should be assessed for other psychiatric illnesses, including anxiety, bipolar illness, SUD, and

Guideline	Recommendations
	<p>nicotine dependence. Refer for further evaluation by mental health if indicated.</p> <p>Use of standardized assessments</p> <ol style="list-style-type: none"> 1. Recommend that all patients should be screened for depression and motor, sensory, cognitive, communication, and swallowing deficits by appropriately trained clinicians, using standardized and valid screening tools. [C] If depression, or motor, sensory, cognitive, communication, or swallowing deficits are found on initial screening assessment, patients should be formally assessed by the appropriate clinician from the coordinated rehabilitation team. [C]
<p>Duncan PW, Zorowitz R, Bates B, et al. Management of adult stroke rehabilitation care: a clinical practice guideline. Stroke 2005;36:e100-e143.</p>	<p>Mood Disturbance</p> <ol style="list-style-type: none"> 1. The Working Group makes no recommendation for the use of any specific diagnostic tool over another. 2. Recommend using a structured inventory to assess specific psychiatric symptoms and monitor symptom change over time (refer to the VA/DoD Guideline for Management of Major Depressive Disorder at http://www.oqp.med.va.gov/cpg/MDD/MDD_Base.htm). 3. Recommend assessing poststroke patients for other psychiatric illnesses, including anxiety, bipolar illness, and pathological affect. 4. Strongly recommend that patients with a diagnosed depressive disorder be given a trial of antidepressant medication, if no contraindication exists. 5. The Working Group makes no recommendation for the use of 1 class of antidepressants over another; however, side effect profiles suggest that SSRIs may be favored in this patient population. 6. Recommend patients with severe, persistent, or troublesome tearfulness be given a trial on antidepressant medications. 7. Recommend SSRIs as the antidepressant of choice in patients with severe, persistent, or troublesome tearfulness. 8. There is insufficient evidence to recommend for or against the use of individual psychotherapy alone in the treatment of PSD. 9. Recommend patients be given information, advice, and the opportunity to talk about the impact of the illness on their lives. 10. Routine use of prophylactic antidepressants is not recommended in poststroke patients. 11. Recommend that mood disorders causing persistent distress or worsening disability be managed by, or with the advice of, an experienced clinical psychologist or psychiatrist. <p>The use of standardized assessment tools</p> <ol style="list-style-type: none"> 1. Recommend that all patients be screened for depression and motor, sensory, cognitive, communication, and swallowing deficits by appropriately trained clinicians, using standardized and valid screening tools. Recommend that if depression and motor, sensory, cognitive, communication, and swallowing deficits are found, all patients should be formally assessed by the appropriate clinician from the coordinated rehabilitation team.

Evidence Tables

Use of Formal Screening Tools to Identify Possible Cases of PSD

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
<p>Yamada et al. 2012</p> <p>Japan</p> <p>Prospective Observational Study</p>	N/A	172 consecutive non-psychiatric inpatients aged ≥65 years referred to the consultation-liaison psychiatry service of a single general hospital from January 2009 through February 2010.	Referring non-psychiatric doctor diagnosis and/or reason for referral was recorded along with primary reason for hospital admission, medications and demographics. The psychiatric diagnosis was recorded by a C-L psychiatrist following consultation with the service. An investigator categorized the referring physician and psychiatric diagnoses according to ICD-10 categories of diagnoses as follows: F0 (delirium, dementia or other organic brain syndrome), F1 (psychoactive substance-use disorder), F2/F3 (psychotic or mood disorder) and F4/F5 (Neurotic or sleep disorder).	Agreement between referring physician diagnoses and psychiatric diagnoses evaluated by kappa statistics.	23 patients (13.4%) were referred to the psychiatry liaison service with a diagnosis or reason for referral of depression. There were 6 diagnosable cases of depression identified by the psychiatric service. The kappa statistic for the F2/F3 diagnostic category (which was mostly depression) was 0.28, overall. In this category, there were 4 cases of possible psychotic disorder identified by referring physicians – these were diagnosed as cases of psychotic disorder in 3 of the 4 cases.
<p>Mitchell and Kakkadasam, 2011</p> <p>UK</p> <p>Meta-analysis</p>	N/A	22 studies reporting the unassisted clinical detection of depression by nurses or nursing assistants	Literature review, critical appraisal of identified studies and meta-analysis of diagnostic accuracy studies. Heterogeneity was assessed using the I ² statistic. In cases of heterogeneity, random effects and bivariate	Pooled sensitivity, specificity, PPV and NPV. Also area under the Bayesian positive curve and 1-AUC to determine rule in and rule-out effectiveness, respectively.	<p>Studies were examined by setting; primary care or community (n=4), hospital (n=7), and nursing homes (n=11). 9 studies used an interview-based assessment to establish depression.</p> <p>In community settings, sensitivity of nurses' observations = 26.3%, specificity = 94.8%. Nurses in hospitals identified 43.1% of cases correctly and 79.6% of noncases while the sensitivity & specificity of observations made by</p>

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
			analysis was used. Bayesian curve analyses were also conducted.		nurses and nursing assistants in nursing homes was 47.8% and 79.4%, respectively. However, curve analysis correcting for variations in prevalence demonstrated AUC for community settings = 0.74, hospital = 0.62 and nursing home = 0.64.
Mitchell et al., 2011 UK Meta-analysis	N/A	23 studies that examined the ability of GPs to diagnose defined distress and 9 studies that examined GPs ability to correctly identify mild depression	Literature review, critical appraisal of identified studies and meta-analysis of diagnostic accuracy studies. Heterogeneity was assessed using the I ² statistic. In cases of heterogeneity, random effects and bivariate analysis was used. Bayesian curve analyses were also conducted.	Pooled sensitivity, specificity, PPV and NPV. Also area under the Bayesian positive curve and 1-AUC to determine rule in and rule-out effectiveness, respectively.	Only 5 of 9 studies examining mild depression provided information on both sensitivity and specificity of clinician observation vs. a robust outcome standard. Pooled analysis revealed that GPs correctly identified mild depression 33.8% of the time and correctly classified non-depressed individuals as non-depressed 80.6% of the time. The authors also provided a pooled estimate of clinician observation sensitivity for the identification of moderate to severe depression of 56.5%. Bayesian curve comparison demonstrated that their ability to rule-in mild depression was worse (AUC=0.59) than their ability to rule-in non-mild forms of depression (AUC=0.67).
Su et al. 2011 Taiwan Retrospective chart review	N/A	Collected data from 5 years of consecutive psychiatric consultations performed in a regional 650-bed general hospital. Review included reason and source of referral, and the final diagnosis. All psychiatric diagnoses were based on DSM-IV.	Five common psychiatric diagnoses were chosen for analysis: depressive disorder (MDD and dysthymia), substance use disorders, anxiety disorders, delirium and psychotic disorders (schizophrenia, brief psychotic disorder and schizophreniform disorders). Primary care physician initial impression was recorded from the "reason for referral". Accurate recognition was based on matching this initial impression with the psychiatric diagnosis. In addition, mentioning	Annual rate of accuracy and overall 5-year rate of accuracy for each diagnosis. Trends in accuracy rate over 5 years was examined as were patient factors associated with accurate recognition.	Overall, 5-year accuracy rate was 41.5%; for depressive disorders, the rate was 31.4%. Over the 5-year period, there was no significant change in rate of accurate diagnosis (p=0.62 for the chi-squared test of trend). For depressive disorders, the rate of accurate diagnosis was associated with younger age (OR=0.61, 95% CI 0.40, 0.92) and the presence of multiple physical illnesses (OR=1.77, 95% CI 0.93, 0.99).

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			core criteria for diagnosis in the referral was considered correct recognition.		
Mitchell et al. 2010 UK Meta-analysis	N/A	31 studies examining the sensitivity and specificity of primary care physician recognition of depression in older (≥60 years) and younger (< 60) individuals	Literature review, critical appraisal of identified studies and meta-analysis of diagnostic accuracy studies. Heterogeneity was assessed using the I ² statistic. In cases of heterogeneity, random effects and bivariate analysis was used. Bayesian curve analyses were also conducted.	Pooled sensitivity, specificity, PPV and NPV. Also area under the Bayesian positive curve and 1-AUC to determine rule in and rule-out effectiveness, respectively.	12 studies enrolled older patients, 12 younger and the remainder were mixed. 13 studies used structured or semi-structured interview –based assessments as the criterion method to establish depression. The remainder used administration of “severity scales”. In the 12 studies of late-life depression, pooled random effects sensitivity of GP clinical diagnosis was 47.3%. However, pooled (random effects) specificity was 78.6%. Based on the Bayesian plot created from meta-analytic data from the older, younger and mixed groups, it was determined that the AUC (ruling in or case-finding) was 0.63 for older adults, 0.65 for younger adults and 0.73 in the mixed population.
Zimmerman and Galione 2010 USA Survey	N/A	291 psychiatrists and 40 non-psychiatrist physicians who were attending a half or full-day medical education conference in 2006 or 2007 in Wisconsin, New York, California or Massachusetts at which the first author also lectured.	Questionnaires were distributed and completed prior to a lecture on the treatment of depression. The first portion of the questionnaire collected demographic information including sex, age, and professional background while the second part contained questions regarding the assessment and treatment of depression. Only one question asked specifically about the use of the DSM-IV criteria in the diagnosis of major depressive	The frequency with which psychiatrist and non-psychiatrist physicians use the DSM diagnostic criteria in their assessment and diagnosis of depression.	45% (n=18) of the non-psychiatrist doctors reported using the criteria in the DSM to diagnose depression less than 25% of the time and 27/40 reported following the criteria less than 50% of the time. Fewer than 20% (n=7) of the non-psychiatrist physicians reported using the DSM-IV criteria more than 75% of the time in making a diagnosis of major depression vs. 60.5% (n=176) psychiatrists who used the criteria more than 75% of the time. Psychiatrists who reported less frequent use of the DSM criteria tended to be older and in practice for the longest amount of time.

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<p>Mitchell et al. 2009</p> <p>UK</p> <p>Meta-analysis</p>	N/A	41 studies assessing the accuracy of unassisted clinical diagnosis of depression by general practitioners. All studies assessed depression using a “robust outcome standard” based on a structured or semi-structured clinical interview.	<p>disorder (MDD).</p> <p>Literature review, critical appraisal of identified studies and meta-analysis of diagnostic accuracy studies. Heterogeneity was assessed using the I^2 statistic. In cases of heterogeneity, random effects and bivariate analysis was used. Bayesian curve analyses were also conducted.</p>	<p>Pooled sensitivity, specificity, PPV and NPV. Also area under the Bayesian positive curve and 1-AUC to determine rule in and rule-out effectiveness, respectively.</p>	<p>Rate of correct identification across 41 studies was 45.4% (uncorrected). Using random effects analysis, the pooled sensitivity was 47.3% (41.7% - 53%). Sensitivity of GP diagnosis appeared somewhat higher in older people (>65 years of age) than in younger people, although this difference was not statistically significant (49.6% vs. 45.1%, $p=0.08$). There were no significant differences in sensitivity found on the basis of ICD-defined vs. DSM-defined depression, country of study origin, sample size, year of publication, prevalence, practice size, or mean patient age.</p> <p>There were 19 studies reporting data for both sensitivity and specificity – based on these studies, it was determined that GPs correctly classified 82.4% of nondepressed individuals as nondepressed. The adjusted (random effects) pooled specificity = 81.3%. Corrected PPV=42% and NPV=85.8%, positive LR=2.37 and negative LR=0.64.</p>
<p>Cepoiu et al. 2007</p> <p>Canada</p> <p>Meta-analysis</p>	N/A	36 studies that included both a clinical diagnosis made by a non-psychiatric physician and a gold standard diagnosis made by a psychiatrist or other individual based on a structured interview of standardised rating scale.	<p>Literature review, critical appraisal of identified studies and pooled analysis. Where possible, authors calculated missing sensitivities, specificities and odds ratio values based on data reported in identified papers as published. Summary statistics were calculated using random effects models. Given a variety of cut points used for standardised rating scales identified, overall sensitivity was recalculated using ROC</p>	<p>Summary receiving operating characteristic (ROC) and summary sensitivity and specificity as well as OR of recognition of depression.</p>	<p>23 papers reported sensitivity only; specificity and diagnostic OR could be calculated in 10 of these. In 8 papers, both sensitivity and specificity were reported. In 5 additional papers, sensitivity, specificity and OR could be calculated from data provided. The majority of the studies (75%) were conducted in primary care settings; the remainder took place in the ER and in various in and out-patient settings. Pooled sensitivity = 36.4% and specificity = 83.7% with a diagnostic OR = 4.0 (95% CI 3.2, 4.9). Recalculation of sensitivity using ROC curves resulted in an overall sensitivity of 42.3%. However, results were heterogeneous. Factors that may have influenced summary sensitivity included method of documentation, date of publication, and age of patients. In general, studies that used chart review, were published before 1998 and included older patient samples</p>

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
			curves. The presence of heterogeneity was assessed using Cochrane's Q test. Sources of heterogeneity were examined using univariate meta-regression.		(age >55), had lower reported sensitivity of diagnosis.
Lowe et al. 2004 Germany Validation Study	N/A	501 patients at outpatient clinics associated with a single hospital and 12 family practices. Mean age = 41.7 (s.d.=13.8 yrs), 67.1% were female and 72.4% lived with a spouse/partner. 10% of participants reported cardiovascular disease or diseases of the circulatory system. Overall, 13.2% of patients were diagnosed with MDD and 25.1% had "any depressive disorder".	Participants completed the PHQ-9, Hospital Anxiety and Depression Questionnaire (HADS), and the WHO well-being index (WBI-5) during the waiting times associated with regular clinic visits. They were asked to complete a structured clinical interview on the same day or return within one week. Non-psychiatric physicians provided their psychiatric diagnoses after clinic consultation on the same day that the participants completed the self-report questionnaires. The SCID for the DSM-IV was used as the criterion standard against which the performance of the questionnaires could be evaluated. In this study, it was administered by one of 4 trained raters who were assigned randomly and were blinded to the results of the questionnaires. Each rater also reviewed interviews performed by	Sensitivity, specificity and overall accuracy were evaluated for all three questionnaires and for physician diagnosis. ROC analysis was used to compare AUC values for all instruments in terms of diagnostic accuracy. Cut-points were calculated and presented.	<p>All scales demonstrated high internal consistency and a high degree of inter-correlation.</p> <p>Major Depressive Disorder: Using a cut-point of ≥ 11, the PHQ-9 demonstrated a sensitivity of 98% and specificity of 80% for the detection of major depressive disorder. The HADS, at a cut-point of ≥ 9 points demonstrated a sensitivity of 85 and specificity of 76 while the WBI-5 demonstrated a sensitivity of 94 and specificity of 78 at a cut-off of ≤ 7 points. The physician diagnosis of major depressive disorder yielded a sensitivity of 40% and a specificity of 87% when compared to the criterion assessment.</p> <p>Any Depressive Disorder: When compared to the criterion standard, the PHQ demonstrated sensitivity and specificity of 87 and 76, respectively (cut off ≥ 9). Using a cut off of ≥ 8, the HADS sensitivity and specificity was 81 and 75, respectively. The WBI-5 showed similar results (sens = 82, spec = 76, cut-off ≤ 9).</p> <p>AUC (SE) = 0.90 (0.02), 0.86 (0.02), 0.88 (0.02) for the PHQ-9, HADS and WBI-5 respectively.</p> <p>As for major depressive disorder, the physician diagnosis was much less sensitive than any of the screening questionnaires used. Sensitivity = 41% and specificity = 90% for any depressive disorder when compared to the gold standard interview.</p>

Study/Type	Quality Rating	Sample Description	Method	Outcomes	Key Findings and Recommendations
Ruchinskas 2002 USA Prospective observational study	N/A	20 physical therapists and 8 occupational therapists rated 102 consecutive (after 12 exclusions) admissions to inpatient geriatric rehabilitation. Patients were mostly female (59%). Mean age = 73.7 (SD=7.3) years. Neurologic and stroke patients comprised 24% of the participant sample.	another rater (k for MDD = 0.88) Each participant completed the MMSE and the Geriatric Depression Scale under the supervision of a doctoral level psychology intern within 72 hours of admission. At the time of discharge, therapists ranked the presence of cognitive impairments or depression in their patients at “any point during their admission” as yes, no or possibly. Point biserial correlations were used to examine the association between therapist rankings and the results of the MMSE and GDS assessments. Individuals with scores below 10 on the GDS were classified as not depressed, 10 – 15 as possibly depressed and >15 as probably depressed.	Agreement GDS, MMSE and therapists' ratings.	Correlations between the therapist rankings of depression and the results obtained from administration of the GDS were non-significant (for PT $r=-0.04$; OT $r=-0.13$). Therapists were much better at identifying individuals with no depression – agreement between GDS and both PT and OT ratings of no depression was reported to be 66%, whereas agreement for possible and probable depression was reported to be only 22% and 13% respectively for the PTs and 11% and 0% for the OTs. There was no association found between years of therapist experience and correct identification of depression. Increased length of stay appeared to be inversely associated with accuracy of classification (i.e. the longer the LOS, the less accurate the classification of depression became). Overall, there was a trend toward over-estimating the incidence of depression. Both PTs and OTs rated 33% of patients as depressed or possibly depressed when only 17% of all individuals tested had scores in excess of 10.

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